

## COMMENTARY

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### ON WINTER RECORDS AND VERTEBRATE PREY IN FLAMMULATED OWLS

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Recent literature has questioned the authenticity of late season sight records and vertebrate prey in flammulated owls (*Otus flammeolus*; McCallum 1994a, b). Herein, I revisit an earlier report (Holt et al. 1987), which has been questioned by McCallum (1994a, b). Additionally, I review and try to clarify other reports of late season sight records and vertebrate prey from flammulated owls that I believe were misinterpreted by McCallum (1994a, b).

#### DATA REVISITED

Holt et al. (1987) reported the following seemingly unusual fall and winter flammulated owl records: (1) In January 1965, a flammulated owl was found helpless in snowstorm and later died; (2) On 21 November 1981, a flammulated owl was observed perched in a tree with a vole in its talons; and (3) On 20 December 1981, a flammulated owl was observed chasing passerines at a bird feeder. These records were scrutinized by me and Philip L. Wright, and all persons making the observations were interviewed. Two of the records in 1981 came from biologists, and the 1965 record was from a birder. The biologist who submitted the report of the owl with a vole is an experienced birder and is familiar with Montana owls. She and her husband observed the owl from a distance of about 8 m for 1 min. A report of a flammulated owl chasing passerines at a feeder was confirmed second hand by a raptor biologist who knew the observer. This observer died before we could speak to him. The person who picked up the flammulated owl in the blizzard kept it in a cage and had an experienced birder confirm its identity using bird field guides. The owl died 1 d later and was discarded.

McCallum (1994a) stated that "If seen, the flammulated owl is easily identified by the unique combination of small size and dark eyes," but then goes on to say that November and December records of flammulated owls in Montana (one with prey, and one chasing passerines at a feeder) are misidentifications. Again, McCallum (1994a) stated that "An unpreserved specimen and two sight records in Montana (Holt et al. 1987) are poorly documented and dubious." Yet he also stated that in "North America, it occurs in lowlands peripheral to breeding habitat in October, sparingly in November, and occasionally in De-

ember" (but see Linkhart and Reynolds 1987). Once again, McCallum (1994a) referring to the Montana records and one Christmas bird count record from Washington, stated that "each of these records is individually unlikely. . . ." He then continues to state that the geographic concentration of these reports carries some weight. The flammulated owl breeds in Montana, and is now known to be much more common than previously believed.

McCallum continues with: "The assertion that small vertebrates are taken has been reported for a century without convincing documentation." But, he then cited conclusive and convincing data: "Smith (1891) took a female whose stomach contained the remains of some small rodents." Bull and Anderson (1978) found a pellet containing the remains of a red-backed vole (*Clethrionomys gapperi*) below an active flammulated owl nest tree and dark-eyed junco (*Junco hyemalis*) feathers in another active nest. This was restated in McCallum (1994b) as "the previous occupants (e.g., northern saw-whet owl [*Aegolius acadicus*], may have taken these prey (E. Bull fide, Cannings pers. comm.)." But Bull (pers. comm.) did not know if northern saw-whet owls or any other species nested in this same cavity the same year prior to the flammulated owls, or in previous years. Linkhart and Reynolds (1994) found a 15–20 g deer mouse (*Peromyscus* sp.) carcass in a flammulated owl nest. The carcass smelled of decay and 11 d had lapsed between visits by the researchers. Although a 1-cm<sup>2</sup> spot of pelage on the mid-dorsal area was missing, no obvious punctures or talon marks were observed. The authors were not able to skin the carcass and examine it for subcutaneous hemorrhages, as an indication of predation (see Holt 1994). Linkhart and Reynolds (1994) offered three alternate explanations, aside from the mouse having been killed by the owl, as to how the carcass got there. They concluded that direct evidence of flammulated owls capturing vertebrates is still lacking. But McCallum (1994a) incorrectly paraphrased their results, and stated that Linkhart and Reynolds (1994) said "another species was responsible for killing it." Linkhart and Reynolds (1994) said no such thing. Although one of their alternate explanations was that a northern saw-whet owl or northern pygmy-owl (*Glaucidium gnoma*) could have brought the deer mouse to the nest in response to food begging calls of the young flammulated owls. It is not unusual for owls to leave uneaten prey in the nest both during breeding and

after dispersal from the nest—particularly cavity nesters (D. Holt pers. obs.).

Cannings (1994) received a dead flammulated owl on 15 November 1988, from southern British Columbia, Canada, which contained the remains of a dusky shrew (*Sorex monticolus*). Cannings concluded that it was the first definite record of flammulated owls eating vertebrate prey (but see Smith 1891). Finally, McCallum (1994a) himself reported the legs of a juvenile mountain chickadee (*Parus gambeli*) in a flammulated owl nest. He concluded "that some flammulated owls over-winter in northern areas by subsisting on vertebrates cannot be completely discounted." In Colorado, mean body mass of breeding female and male flammulated owls was 65.6 g (SD = 10.85,  $N = 25$ ) and 54.7 g (SD = 3.28,  $N = 27$ ), respectively (Reynolds and Linkhart 1987). Mean body mass of the similar-sized northern pygmy-owl females is 73.0 g ( $N = 10$ ) and males 61.9 g ( $N = 42$ ) (Earhart and Johnson 1970). Yet northern pygmy-owls kill and consume a wide range of vertebrates from shrews (*Sorex* spp., 3 g) to flickers (*Colaptes* spp., 167 g), with mean mass about 38 g for both avian and mammalian prey (Holt and Leroux 1996). It has been said that flammulated owls have "weak" feet (McCallum 1994b), and this has been assumed to be one reason why they cannot kill vertebrate prey. I know of no quantitative data to support or refute this statement. However, raptorial feet are used for seizing prey (although lethal wounds cannot be ruled out) and it is often the bill that delivers the killing bite to the occipital region of the skull or by snapping the cervical vertebrae.

#### NEW DATA

K. McKeever (pers. comm.) reported that when offered a choice of insects or dead lab mice (*Mus musculus*) weighing 12–20 g, a captive-breeding female flammulated owl almost always took the mice. Similarly the male, almost always took 12–15 g mice back to the nestlings. And both always took the larger mice over smaller ones. McKeever has also observed that 20 g mice were difficult for the owls to eat, but 12–15 g mice were effectively consumed. This is not proof of killing, but certainly the willingness and ability to consume mice. Carl Marti (pers. comm.) found two dried juvenile *Peromyscus* carcasses in a flammulated owl nest after the young owls had fledged. No evidence of the mice nesting in the box was evident, and they were not there prior to flammulated owl nesting. Cause of death could not be determined.

In October 1994, the Montana Verification Record Committee accepted another fall record for a flammulated owl—10 November 1993. And, on 19 November 1994, a flammulated owl was observed and very well described by a hunter in western Montana. This record is currently under review.

Why have researchers been so cautious in accepting that flammulated owls may occasionally eat vertebrate prey and occur during fall and winter particularly in the northern part of the species' range where we know very little about their natural history? Noctuid moths—a primary food item in Colorado (Reynolds and Linkhart 1987)—are commonly found throughout November in Montana (D. Holt pers. obs.). Furthermore, in Colorado, postnesting adult flammulated owls remain on their breeding

grounds (about 2400–3000 m elevation) to about 12 October (Linkhart and Reynolds 1987). R. Reynolds (pers. comm.) stated that flammulated owls are able to withstand very cold spring nights, provided food is available. Dietary analysis of flammulated owls has been conducted primarily from May through October in Colorado (R. Reynolds pers. comm.), but see McCallum (1994a, b) for other studies. No studies have yet addressed the diet of flammulated owls in the northern limits of their range. Although captive situations and laboratory experiments may be helpful in determining if flammulated owls can capture, kill and consume various-sized vertebrate prey, caution should be taken in extrapolating from these results.

In retrospect, Holt et al. (1987) could have provided more data, even direct quotes concerning these records. McCallum's concerns likely stemmed from the vertebrate prey reported, and the lack of specimens and photographs. I believe scientists should be judicious, but I also feel that we cannot only believe ourselves—there are many qualified people in the field.

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